

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	1	"6002483"	USPAT	2002/01/25 07:14
2	BRS	L2	1	"5608522".PN.	USPAT	2002/01/25 07:14
3	BRS	L3	1	"4948257".PN.	USPAT	2002/01/25 07:14
4	BRS	L4	1	"4696568".PN.	USPAT	2002/01/25 07:14
5	BRS	L5	1	((n adj2 a) or na)same (greater adj5 "0.7")	USPAT	2002/01/25 07:17
6	BRS	L6	14	((n adj2 a) or na)same (greater adj5 "0..8")	USPAT	2002/01/25 07:22
7	BRS	L7	4	((n adj2 a) or na)same (greater adj5 "0..8")	US-PGPU B; EPO; JPO; DERWENT ; IBM TDB	2002/01/25 07:26

	Comments	Error Definition	Errors
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3			0
4			0
5			0
6			0
7			0

EAST - [a1.wsp:1]

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DBs: USPAT ☐ Plurals

Default operator: OR ☒ Highlight all hit terms initially

2 and (na aperture)

BRS term ISAR term Image Text HTML

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- BRS: 9 and ("near

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- L2: (14) 1 and ("0.07")
- L3: (2) 2 and ((na aperture
- L4: (13) 2 and (na aperture

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Saved

Favorites

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Trash

	U	I	Document ID	Issue Dat	Page	Title	Current OR	Current XR	Retrieval
1	<input type="checkbox"/>	<input type="checkbox"/>	US 6515808 B2	20030204	36	Optical pickup apparatus and objective	359/721	359/719; 369/112.01	
2	<input type="checkbox"/>	<input type="checkbox"/>	US 6512640 B2	20030128	61	Objective lens for pickup and light pickup	359/719	359/642; 369/112.01	
3	<input type="checkbox"/>	<input type="checkbox"/>	US 6411442 B1	20020625	61	Objective lens for pickup and light pickup	359/642	250/201.5; 359/649;	
4	<input type="checkbox"/>	<input type="checkbox"/>	US 6363037 B1	20020326	31	Optical pickup apparatus with objectiv	369/112.26	369/112.06 ;	
5	<input type="checkbox"/>	<input type="checkbox"/>	US 6313956 B1	20011106	39	Optical pickup apparatus and objective	359/721	250/201.5; 359/719	
6	<input type="checkbox"/>	<input type="checkbox"/>	US 6192021 B1	20010220	46	Optical pickup apparatus	369/53.2	369/112.26 ;	
7	<input type="checkbox"/>	<input type="checkbox"/>	US 6061324 A	20000509	94	Method for recording/reproducing o	369/112.26	369/44.12; 369/44.14;	
8	<input type="checkbox"/>	<input type="checkbox"/>	US 6052355 A	20000418	20	Optical pickup apparatus and a compens	369/112.28	369/53.23; 369/53.41;	
9	<input type="checkbox"/>	<input type="checkbox"/>	US 5808999 A	19980915	23	Optical pickup apparatus and objective	369/112.26	369/44.12; 369/44.24;	
10	<input type="checkbox"/>	<input type="checkbox"/>	US 5757758 A	19980526	44	Optical pickup apparatus objective len	369/112.25	369/44.12	
11	<input type="checkbox"/>	<input type="checkbox"/>	US 5608715 A	19970304	28	Multi-layered recording disk and recording/repr	369/275.1	369/281; 369/94	
12	<input type="checkbox"/>	<input type="checkbox"/>	US 4797545 A	19890110	11	Optical head device having positionally adi	250/201.5	369/44.23	
13	<input type="checkbox"/>	<input type="checkbox"/>	US 4577941 A	19860325	8	Optical apparatus	359/737	250/493.1; 359/637;	

US-PAT-NO: 4797545

DOCUMENT-IDENTIFIER: US 4797545 A

TITLE: Optical head device having positionally adjustable parts

----- KWIC -----

Brief Summary Text - BSTX (17):

Therefore, the converging beam which is incident to the information recording surface 4 must be free from any aberration so that the condensed spot 5 formed by the system at the diffraction limit may be radiated on the information track 12. The wave-front aberration which is permissible as the diffraction limit has a standard deviation of 0.07 .lambda. (Marechal limit), where, .lambda. is the wavelength of the LD.

Brief Summary Text - BSTX (25):

For example, if the disk comprises a polycarbonate substrate having a refractive index  $N$  of 1.55 and if the condensing lens has a numerical aperture (NA) expressed as  $\sin.\theta_{\text{sub.2}} = 0.5$ , formula (1) gives the rms wave-front aberration of 0.014 .lambda. for light having a wavelength of 0.78 .mu.m if the disk has an error of 50 .mu.m in thickness. This amounts to 20% of the allowable rms wave-front aberration of 0.07 .lambda. which has hereinabove been stated, though the error in thickness of the disk is very small.

US-PAT-NO: 4797545

DOCUMENT-IDENTIFIER: US 4797545 A

TITLE: Optical head device having positionally adjustable parts

DATE-ISSUED: January 10, 1989

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Shikama; Shinsuke	Kyoto	N/A	N/A	JP
Kondo; Mitsushige	Kyoto	N/A	N/A	JP
Toide; Eiichi	Kyoto	N/A	N/A	JP

## ASSIGNEE INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mitsubishi Denki	Tokyo	N/A	N/A	JP
Kabushiki Kaisha				

APPL-NO: 07/ 052860

DATE FILED: April 29, 1987

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	60-200163	September 10, 1985

## PCT-DATA:

APPL-NO: PCT/JP86/00416

DATE-FILED: August 14, 1986

PUB-NO: WO87/01466

PUB-DATE: Mar 12, 1987

371-DATE: Apr 29, 1987

102 (E)-DATE: Apr 29, 1987

INT-CL: [04] G01J001/20

US-CL-ISSUED: 250/201, 369/44

US-CL-CURRENT: 250/201.5, 369/44.23

FIELD-OF-SEARCH: 250/21DF; 250/21AF ; 250/21R ; 250/216 ; 369/44 ; 369/45 ; 369/46

## REF-CITED:

## U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3932700	January 1976	Snopko	250/2
4128847	December 1978	Roulet et al.	250/2
4302830	November 1981	Hamaoka et al.	369/4
4354103	October 1982	Immink et al.	250/2
4458144	July 1984	Reilly et al.	369/4

ART-UNIT: 255

PRIMARY-EXAMINER: Nelms; David C.

ASSISTANT-EXAMINER: Oen; William L.

ATTY-AGENT-FIRM: Staas & Halsey

US-PAT-NO: 6052355

DOCUMENT-IDENTIFIER: US 6052355 A

TITLE: Optical pickup apparatus and a compensation element therefor

----- KWIC -----

Brief Summary Text - BSTX (5):

Under the background stated above, there have been proposed various optical pickup apparatuses capable of recording information on and reading information from plural optical disks (hereinafter referred to as recording/reading) by using one light-converging optical system. As one of them, TOKKAIHEI 7-57271 discloses an optical pickup apparatus wherein an objective lens which is designed so that a wave front aberration owned by a beam to be converged is  $0.07 \cdot \lambda$  or less is used for the first optical disk with a transparent base board having a thickness of  $t_1$ , while a converged spot is formed under the slight defocusing state for the second optical disk with a transparent base board having a thickness of  $t_2$ .

Brief Summary Text - BSTX (22):

(13) The optical pickup apparatus described in either one of the structures (1)-(12) above, wherein, when the light-converging optical system converges a luminous flux emitted from a light source on the information recording surface of the first optical information recording medium, best wave front aberration is  $0.05 \cdot \lambda$  rms or less (provided that  $\lambda$  is a wavelength of a light source which is used when reading from and recording on the first optical information recording medium).

Detailed Description Text - DETX (8):

The light-converging optical system is a means which converges a luminous flux emitted from a light source (the first semiconductor laser 111 or the second semiconductor laser 112) on information recording surface 22 through transparent base board 21 of optical disk 20 and thereby forms a spot. In the present embodiment, the light-converging optical system is provided with collimator lens 13 which converts a luminous flux emitted from a light source into a collimated light (or could be a mostly collimated light) and objective lens 16 converges a luminous flux which is converted by collimator lens 13 into a collimated light. This light-converging optical system is arranged so that best wave front aberration may be  $0.05 \cdot \lambda$  rms or less when a luminous flux emitted from the first semiconductor laser 111 is converged on the information recording surface of the first optical disk. "Best wave front aberration" in this case means a wave front aberration wherein defocus component and tilt component are corrected, and its value is expressed with root mean square (rms).

US-PAT-NO: 6363037

DOCUMENT-IDENTIFIER: US 6363037 B1

TITLE: Optical pickup apparatus with objective lens having a phase shift section

----- KWIC -----

Brief Summary Text - BSTX (3):

In recent years, with the practical use of a red semiconductor laser of a short wavelength, development of a DVD (digital video disk or called also a digital versatile disk), which is a high-density optical information recording medium having a larger capacity but a size of the same degree as a CD (compact disk) which is a conventional optical information recording medium (also called an optical disk), has been promoted. In this DVD, the numerical aperture NA of the objective lens at the side of the optical disk is made to be 0.6 in the case where a short wavelength semiconductor laser of 635 nm is used. Further, a DVD has a track pitch of 0.74  $\mu\text{m}$  and a minimum pit length of 0.4  $\mu\text{m}$ , and is made to have a high density more than twice in comparison with a CD, which has a track pitch of 1.6  $\mu\text{m}$  and a minimum pit length of 0.83  $\mu\text{m}$ . Moreover, in addition to the above-mentioned CD and DVD, optical disks having various standards, for instance, such as a CD-R (a direct read after write, writing once compact disk), an LD, an MD (mini-disk), and an MO (magneto-optic disk) are merchandised and have come into general use. In Table 1, the thickness of the transparent substrate and the required numerical aperture of various optical disks are shown.

Brief Summary Text - BSTX (4):

Besides, with regard to the CD-R, it is necessary for the light source to have a wavelength  $\lambda = 780$  (nm), but for the other optical disks, a light source having a wavelength other than those noted in Table 1 can be used; in this case, the required numerical aperture NA should be varied in accordance with the wavelength  $\lambda$  of the light source used. For example, in the case of a CD, the required numerical aperture is approximated by  $\text{NA} = \lambda / 1.73$  ( $\mu\text{m}$ ), and in the case of a DVD, it is approximated by  $\text{NA} = \lambda / 1.06$  ( $\mu\text{m}$ ).

Brief Summary Text - BSTX (5):

Further, the numerical aperture as referred to in this specification (for example, referred to as  $\text{NA}_1$ ,  $\text{NA}_2$ ,  $\text{NA}_3$ ,  $\text{NA}_4$ , etc. hereinafter) means the numerical aperture of the converging optical system as seen from the transparent substrate side.  $\text{NA}_1$  is a numerical aperture necessary for reproducing information from or recording information in the first optical information recording medium and  $\text{NA}_2$  is a numerical aperture necessary for reproducing information from or recording information in the second optical information recording medium.

Brief Summary Text - BSTX (12):

However, in the optical pickup apparatus described in Japanese laid open patent H7-302437, it is necessary to make the laser output large because the incident light quantity is simultaneously divided into two focal points by a single objective lens, which brings about high cost. Further, in the optical pickup apparatus described in Japanese laid open patent H7-57271, increasing of

US-PAT-NO: 6353592

DOCUMENT-IDENTIFIER: US 6353592 B1

TITLE: Optical recording medium and optical disk device

DATE-ISSUED: March 5, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kashiwagi; Toshiyuki	Tokyo	N/A	N/A	JP
Sakamoto; Tetsuhiro	Chiba	N/A	N/A	JP
Ohsato; Kiyoshi	Chiba	N/A	N/A	JP

## ASSIGNEE INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sony Corporation	Tokyo	N/A	N/A	JP

APPL-NO: 09/ 242911

DATE FILED: June 9, 1999

## FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	9-172642	June 27, 1997

## PCT-DATA:

APPL-NO: PCT/JP98/02822

DATE-FILED: June 24, 1998

PUB-NO: WO99/00794

PUB-DATE: Jan 7, 1999

371-DATE: Jun 9, 1999

102 (E)-DATE: Jun 9, 1999

INT-CL: [07] G11B007/24

US-CL-ISSUED: 369/283, 369/286 , 369/275.5 , 428/64.4 , 430/271.1

US-CL-CURRENT: 369/283, 369/275.5 , 369/286 , 428/64.4 , 430/271.1

FIELD-OF-SEARCH: 369/275.2; 369/94 ; 369/13 ; 369/286 ; 369/283 ; 369/275.4  
; 369/275.5 ; 369/275.3 ; 369/284 ; 369/275.1 ; 369/280  
; 428/199 ; 428/64.4 ; 430/270.21 ; 430/271.1

## REF-CITED:

## U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4525412	June 1985	Nakane et al.	428/1
5244706	September 1993	Hirata et al.	428/6
5397597	March 1995	Soga et al.	427/2
5508981	April 1996	Watanabe et al.	369/2
5726970	March 1998	Kaneko et al.	369/2
5907534	May 1999	Yamatsu	369/2
6156482	December 2000	Hamada et al.	430/2

## FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
5-33319	April 1993	JP	
9-134547	May 1997	JP	
9-147417	June 1997	JP	



US-PAT-NO: 6515808  
DOCUMENT-IDENTIFIER: US 6515808 B2  
TITLE: Optical pickup apparatus and objective lens

----- KWIC -----

Brief Summary Text - BSTX (3):

In recent years, with the practical use of a red semiconductor laser of a short wavelength, development of a DVD (digital video disk or called also a digital versatile disk), which is a high-density optical information recording medium having a larger capacity but a size of the same degree as a CD (compact disk) which is a conventional optical information recording medium (also called an optical disk), has been promoted. In this DVD, the numerical aperture NA of the objective lens at the side of the optical disk is made to be 0.6 in the case where a short wavelength semiconductor laser of 635 nm is used. Further, a DVD has a track pitch of 0.74  $\mu\text{m}$  and a minimum pit length of 0.4  $\mu\text{m}$ , and is made to have a high density more than twice in comparison with a CD, which has a track pitch of 1.6  $\mu\text{m}$  and a minimum pit length of 0.83  $\mu\text{m}$ . Moreover, in addition to the above-mentioned CD and DVD, optical disks having various standards, for instance, such as a CD-R (a direct read after write, writing once compact disk), a CD-RW, a LD (laser disk), an MD (mini-disk), and an MO (magneto-optic disk) are merchandised and have come into general use. In Table 5, the thickness of the transparent substrate and the required numerical aperture of various optical disks are shown.

Brief Summary Text - BSTX (4):

Besides, with regard to the CD-R, it is necessary for the light source to have a wavelength  $\lambda = 780$  (nm), but for the other optical disks, a light source having a wavelength other than those noted in Table 5 can be used; in this case, the required numerical aperture NA should be varied in accordance with the wavelength  $\lambda$  of the light source used. For example, in the case of a CD, the required numerical aperture is approximated by  $NA = \lambda (\mu\text{m}) / 1.73$ , and in the case of a DVD, it is approximated by  $NA = \lambda (\mu\text{m}) / 1.06$ .

Brief Summary Text - BSTX (5):

Further, the numerical aperture as referred to in this specification (for example, referred to as NA1, NA2, NA3, NA4, etc. hereinafter) means the numerical aperture of the converging optical system as seen from the transparent substrate side.

Brief Summary Text - BSTX (20):

where, in case that the first portion converges the first light flux on a first information recording plane, SC1 is a sine condition dissatisfaction amount of the first portion of the objective lens for a light flux at a height in the first light flux, and in case that the first portion converges the first light flux on a first information recording plane, f1 is a focal length of the first portion of the objective lens for a light flux at a height in the first light flux. Incidentally, the term "an amount of the first light flux not less than 30% of the total amount of the first light flux passing the first portion" does not mean "not less than 30% of an energy amount of the first light flux passing the first portion" and means "rays not less than 30% of the first light flux passing the first portion". The above rate can be judged from the

US-PAT-NO: 6349083

DOCUMENT-IDENTIFIER: US 6349083 B1

TITLE: Near field type optical disk record  
information recording medium recording reple  
objective lens

----- KWIC -----

Brief Summary Text - BSTX (2):

The present invention relates to an apparatus for recording information in an optical information recording medium and a pickup apparatus for use in the apparatus. The innovation relates to a near field type optical recording apparatus in which a distance between an objective lens of an optical disk is smaller than an order of the objective lens and a pickup apparatus for use in the present invention relates to an recording apparatus (numerical aperture) is larger and a high

Brief Summary Text - BSTX (5):

In this optical system, since a precise optical system is constructed with the two pieces of lenses, the system is needed for assembling and adjustment. Further, by polishing. As a result, the cost for the

Brief Summary Text - BSTX (45):

As stated above, in a near field type optical system of the present invention comprises a lens whose light source side is a curved surface. It may be preferable that a ring is formed on the curved surface. It may be preferable that the side is a flat surface. It may be preferable that the side is a flat surface as a whole.

Brief Summary Text - BSTX (53):

where  $\psi$  is a power of the entire system,  $\psi$  is the sum of the power of the diffraction surface of the second surface of the objective lens,  $\lambda$  is the wavelength of the light source, and  $NA$  is a numerical aperture of the objective lens.

Brief Summary Text - BSTX (65):

where  $\psi$  is a power of the entire system,  $\psi$  is the sum of the power of the diffraction surface of the second surface of the objective lens,  $\lambda$  is the wavelength of the light source,  $NA$  is a numerical aperture of the objective lens.

Brief Summary Text - BSTX (70):

U.S. Patent

Feb. 19, 2002

Sheet 8 of 11

US 6,349,083 B1

FIG. 15

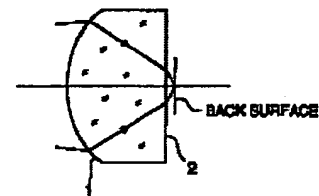
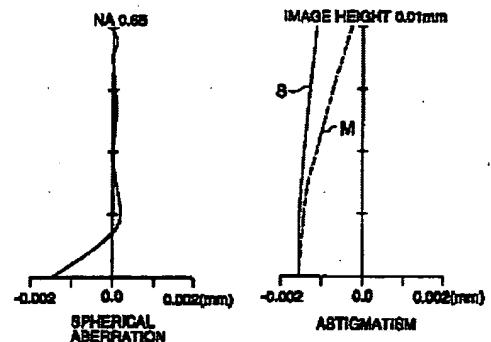


FIG. 16



US-PAT-NO: 6349083

DOCUMENT-IDENTIFIER: US 6349083 B1

TITLE: Near field type optical disk record information recording medium recording reproduction objective lens

----- KWIC -----

#### Brief Summary Text - BSTX (2):

The present invention relates to an apparatus for recording information in an optical information recording medium and a pickup apparatus for use in the apparatus. The innovation relates to a near field type optical apparatus in which a distance between an object and an optical disk is smaller than an order of the objective lens and a pickup apparatus for use in the present invention relates to an recording apparatus (numerical aperture) is larger and a high

#### Brief Summary Text - BSTX (5):

In this optical system, since a precise optical system is constructed with the two pieces of lenses, the system is needed for assembling and adjustment. Further, by polishing. As a result, the cost for the

#### Brief Summary Text - BSTX (45):

As stated above, in a near field type optical system of the present invention comprises a lens whose light source side is a curved surface. It may be preferable that a ring is formed on the curved surface. It may be preferable that the side is a flat surface. It may be preferable that the side is a flat convex lens as a whole.

#### Brief Summary Text - BSTX (53):

where  $\psi$  is a power of the entire system,  $\psi_d$  is the sum of the power of the diffraction surface and the power of the diffraction surface of the second wavelength of the light source, and  $NA$  is a numerical aperture of the objective lens.

#### Brief Summary Text - BSTX (65):

where  $\psi$  is a power of the entire system,  $\psi_d$  is the sum of the power of the diffraction surface and the power of the diffraction surface of the second wavelength of the light source,  $NA$  is a numerical aperture of the objective lens.

#### Brief Summary Text - BSTX (70):

U.S. Patent Feb. 19, 2003 Sheet 8 of 11 US 6,349,083 B1

FIG. 15

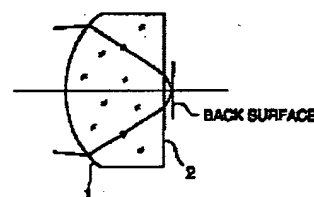
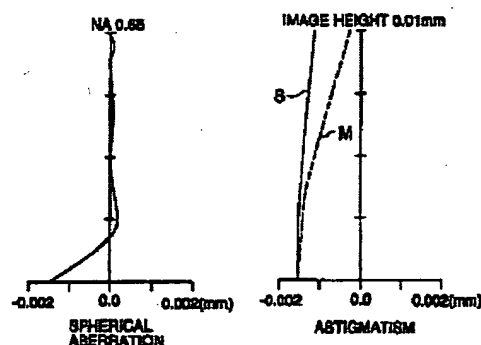
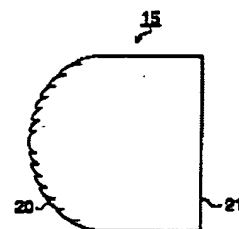


FIG. 16





US-PAT-NO: 6141305

DOCUMENT-IDENTIFIER: US 6141305 A

TITLE: Optical disk recording and reproducing apparatus and method and tracking servo apparatus and method

----- KWIC -----

Detailed Description Text - DETX (16):

In this case, in order to make the optical disk 1 high in density, as the objective lens 5 installed in the optical pickup 4 so as to oppose the optical disk 1, there may be utilized a 2-group lens realizing a high numerical aperture (NA).

Detailed Description Text - DETX (17):

As shown in FIG. 2, the 2-group lens is formed of two lenses, or a front lens 103, whose surface on the side of the optical disk 1 is flat while whose surface on the side of an objective lens 104 is a curved surface of aspheric, and the objective lens 104 which is an aspherical lens. A hemispherical lens formed of a flat surface and a spherical surface may be used as the front lens 103.

Detailed Description Text - DETX (22):

The 2-group lens uses a light source with the wavelength larger than 680 nm and has a high NA more than 0.7, for example 0.81. The working distance between the objective lens 104 and the optical disk 1 is less than 560 .mu.m, for example, 100 .mu.m. Therefore, the 2-group lens has a high NA, a small clearance against the optical disk 1 and its aberration is reduced.

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Default operator: OR

Plurals

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Drafts

- BRS: 9 and ("near
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1	<input type="checkbox"/>	<input type="checkbox"/>	US 6490100 B1	20021203	15	Objective lens and optical head device	359/719	359/708; 359/710;	
2	<input type="checkbox"/>	<input type="checkbox"/>	US 6480455 B2	20021112	20	Optical pickup device applicable to two kinds	369/112.22	369/112.01	
3	<input type="checkbox"/>	<input type="checkbox"/>	US 6349083 B1	20020219	23	Near field type optical disk recording reproduc	369/112.23	359/719; 369/112.08	
4	<input type="checkbox"/>	<input type="checkbox"/>	US 6343058 B1	20020129	20	Optical pickup device applicable to two kinds	369/112.1	369/94	
5	<input type="checkbox"/>	<input type="checkbox"/>	US 6229600 B1	20010508	14	Spherical-aberration detection system and op	356/123		
6	<input type="checkbox"/>	<input type="checkbox"/>	US 6141305 A	20001031	14	Optical disk recording and reproducing apparat	369/44.32	369/53.18	
7	<input type="checkbox"/>	<input type="checkbox"/>	US 5978140 A	19991102	19	Method for designing diffractive lenses	359/569	359/565; 359/570;	
8	<input type="checkbox"/>	<input type="checkbox"/>	US 5793539 A	19980811	38	Optical system for endoscopes	359/739	359/708	
9	<input type="checkbox"/>	<input type="checkbox"/>	US 5777803 A	19980707	18	Objective lens for optical pick-up head of	359/719	359/742; 359/743	
10	<input type="checkbox"/>	<input type="checkbox"/>	US 5657168 A	19970812	58	Optical system of optical information rec	359/719	359/618; 359/717;	
11	<input type="checkbox"/>	<input type="checkbox"/>	US 5384654 A	19950124	12	Image observation device	359/364	359/630; 359/631;	
12	<input type="checkbox"/>	<input type="checkbox"/>	US 5379266 A	19950103	33	Optical random access memory	365/234	365/125; 365/215;	
13	<input type="checkbox"/>	<input type="checkbox"/>	US 5289313 A	19940222	13	Optical head using semiconductor laser arr	369/112.28	369/121	
14	<input type="checkbox"/>	<input type="checkbox"/>	US 4867546 A	19890919	37	Objective lens system for an endoscope	359/714		
15	<input type="checkbox"/>	<input type="checkbox"/>	US 4820029 A	19890411	7	Objective lens for optical pickup	359/719		

EAST - [a1.wsp:1]

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- L2: (31) 1 same ((parallel
- L3: (0) 2 and (na same .7)
- L4: (0) 3 and na
- L5: (15) 2 and na
- L6: (493) ((objective imag
- L7: (12) 6 same ((paralle
- L8: (7) 7 and na

**Failed**

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- (0) 4 and ((lens near5 hol
- (0) ((objective imaging) n

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DBs: US-PGPUB; EPO; JPO; DERWENT; IBM\_TDB ☐ Plurals

Default operator: OR ☒ Highlight all hit terms initially

7 and na

BRS form ISE form Image Text HTML

	U	1	Document ID	Issue Dat	Pages	Title	Current OR	Current XR	Retrieval
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 20020186476	20021212	20	Optical system for optical disk, optical h	359/719	359/717; 359/718	
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 20020105733	20020808		Optical scanning device	359/719		
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 20020064121	20020530		Optical pickup device applicable to two kinds	369/112.22	369/112.24	
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 20020027863	20020307		Complex objective lens and method for manufact	369/112.24		
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 20020024741	20020228		Projection optical system and projection e	359/627	359/628; 359/629	
6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 20010015939	20010823		Objective lens for optical pick-up	369/13.01		
7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	JP 02101416 A	19900413		OBJECTIVE LENS FOR OPTICAL MEMORY		359/737	